

MECHANICAL ABBREVIATIONS

GENERAL NOTES

A/E ARCHITECT / ENGINEER
AAHX AIR TO AIR HEAT EXCHANGER
AB AIR BLENDER
AAV AUTOMATIC AIR VENT
ACC AIR COOLED CONDENSER
ACCH AIR COOLED CHILLER
ACCU AIR-COOLED CONDENSING UNIT
ACU AIR CONDITIONING UNIT
ACD AUTOMATIC CONTROL DAMPER/MODULATING
ACD-TP AUTOMATIC CONTROL DAMPER, TWO POSITION
AD ACCESS DOOR
AF AFTER FILTER
AFCV AIR FLOW CONTROL VALVE
AFF ABOVE FINISHED FLOOR
AFMD AIR FLOW MEASURING DEVICE
AFW AIR FOIL WHEEL (FAN)
AHU AIR-HANDLING UNIT
AMP AMPERGE
AP ACCESS PANEL
APD AIR PRESSURE DROP
ARI AIR CONDITIONING AND REFRIGERATION INSTITUTE
AS AIR SEPARATOR
ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AW AIR WASHER
AXF AXIAL FLOW

B BOILER
BD BUTTERFLY DAMPER
BDD BACKDRAFT DAMPER
BDR BASE BOARD RADIATOR
BFP BACKFLOW PREVENTER
BFT BOILER PLANT FIRE TUBE
BG BOTTOM GRILLE
BHP BRAKE HORSEPOWER
BHW HOT WATER HEATING BOILER
BHX BOILER BLOWDOWN HEAT EXCHANGER
BIW BACKWARD INCLINED WHEEL (FAN)
BMT BONE MARROW TRANSPLANT
BR BOTTOM REGISTER
BSC BIOLOGICAL SAFETY CABINETS
BT BLOWOFF TANK
BTC BLOWOFF TANK CONTROL VALVE
BTU BRITISH THERMAL UNIT
BTUH BRITISH THERMAL UNIT PER HOUR
BWT BOILER PLANT WATER TUBE

C CENTIGRADE (CELCIUS)
CC COOLING COIL
CCD COOLING COIL CONDENSATE DRAIN
CD CEILING DIFFUSER
CD-1 CONSTRUCTION DOCUMENTS (SUBMISSION1)

CD-2 CONSTRUCTION DOCUMENTS (SUBMISSION2)
CENT CENTRIFICAL
CFH CUBIC FEET PER HOUR
CFM CUBIC FEET PER MINUTE
CFT CUBIC FEET
CFP CHEMICAL FEED PUMP
CG CEILING GRILLE
CH CHILLER
CHP CHILLED WATER PUMP
CHW CHILLER WATER
CHR CHILLED WATER RETURN
CHS CHILLED WATER SUPPLY
CI CAST IRON
CM CARBON MONOXIDE
CM CUBIC METER
CM/S CUBIC METER PER SECOND
CO CLEAN OUT
CO2 CARBON DIOXIDE
COMP COMPRESSOR UNIT
COP COEFFICIENT OF PERFORMANCE
CP CONDENSATE PUMP
CR CEILING REGISTER
CS CONDENSATE STORAGE TANK
CSG CLEAN STEAM GENERATOR
CT COOLING TOWER
CU CONDENSING UNIT
CUH CABINET UNIT HEATER
CV CONSTANT VOLUME
CW COLD WATER (POTABLE)
CWCC CHILLED WATER COOLING COIL
CWP CONDENSER WATER PUMP
CWR CONDENSER WATER RETURN (TO COOLING TOWER)
CWS CONDENSER WATER SUPPLY (FROM COOLING TOWER)

D DAMPER - AUTOMATIC
D-1 OUTDOOR AIR DAMPER
D-2 RETURN AIR DAMPER
D-3 RELIEF AIR DAMPER
DB DECIBELS
Db DRY-BULB TEMPERATURE
DD-1 DESIGN DEVELOPMENT (SUBMISSION1)
DD-2 DESIGN DEVELOPMENT (SUBMISSION2)
DDC DIRECT DIGITAL CONTROLS
DEG DEGREE
DF DIFFUSER
DIA DIAMETER
DIW DEIONIZED WATER

DP DEW POINT TEMPERATURE
DP DIFFUSER PLATE
DPA DIFFERENTIAL PRESSURE ASSEMBLY
DPS DIFFERENTIAL PRESSURE SENSOR
DX DIRECT EXPANSION
DXCC DIRECT EXPANSION COOLING COIL

EA EXHAUST AIR
EAT ENTERING AIR TEMPERATURE
EC EVAPORATIVE COOLER
ECC ENGINEERING CONTROL CENTER
ECU EVAPORATIVE CONDENSER UNIT
EDH ELECTRIC DUCT HEATER
EER ENERGY EFFICIENCY RATIO
EF EXHAUST FAN
EG EXHAUST GRILLE
EGS EMERGENCY GAS SHUTOFF
EGT ENTERING GLYCOL TEMPERATURE
EH EXHAUST HOOD
EJ EXPANSION JOINT
EMD END OF MAIN DRIP (STEAM)
ENT ENTERING
ER EXHAUST REGISTER
ERC ELECTRIC REHEAT COIL
ERP ELECTRIC RADIANT PANEL
ESP EXTERNAL STATIC PRESSURE
ET EXPANSION TANK
ETO ETHYLENE OXIDE
EUH ELECTRIC UNIT HEATER
EWC EVAPORATIVE WATER COOLER
EWT ENTERING WATER TEMPERATURE
EX EXISTING

F FAHRENHEIT
F&T FLOAT AND THERMOSTATIC
F/SDPR COMBINATION FIRE SMOKE DAMPER
FA FREE AREA
FC FLEXIBLE CONNECTION
FCU FAN COIL UNIT (4 PIPE)
FCUC FAN COIL UNIT COOLING ONLY
FCUH FAN COIL UNIT HEATING ONLY
FCW FORWARD CURVED WHEEL (FAN)
FD FLOOR DRAIN
FD FIRE DAMPER
FF FINAL FILTER
FHX FLUE GAS/FEEDWATER HEAT EXCHANGER
FM FLOW METER
FOP FUEL OIL PUMP
FOH FUEL OIL HEAT EXCHANGER
FOV FUEL OIL VENT
FPM FEET PER MINUTE
FPS FEET PER SECOND
FPTU FAN POWERED TERMINAL UNIT
FR FLOOR REGISTER
FRP FIBER REINFORCED POLYESTER
FS FLOW SWITCH
FSTAT FREEZESTAT

FT FEET
FT-LB FOOT-POUND
FTR FIN TUBE RADIATION
FV FACE VELOCITY
GA GAUGE
GAL GALLONS
GH GRAVITY HOOD
GPD GALLONS PER DAY
GPH GALLONS PER HOUR
GPM GALLONS PER MINUTE
GPR GAS PRESSURE REGULATOR
GS GALVANIZED STEEL

H HUMIDIFIER
H&CW HOT & COLD WATER
HAC HOUSEKEEPING AID CLOSET
HB HOSE BIBB
HC HEATING COIL
HD HEAD
HD HOOD
HOA HAND/OFF/AUTOMATIC
HP HEAT PUMP
HP HORSEPOWER
HPDT HIGH PRESSURE DRIP TRAP
HPR HIGH PRESSURE RETURN (STEAM CONDENSATE)
HPS HIGH PRESSURE SUPPLY (STEAM)
HRC HEAT RECOVERY COIL
HRD HEAT RECOVERY DEVICE
HRP HYDRONIC RADIANT (CEILING) PANEL
HRW HEAT RECOVERY WHEEL
HSTAT HUMIDISTAT
HTM HUMIDIFIER TERMINAL
HUM HUMIDIFIER UNIT MOUNTED
HVU HEATING AND VENTILATING UNIT
HW HOT WATER
HWC HOT WATER COIL
HWHC HOT WATER HEATING COIL
HWP HEATING HOT WATER PUMP
HWR HEATING HOT WATER RETURN
HWS HEATING HOT WATER SUPPLY
HWHU HOT WATER UNIT HEATER
HVD HOISTWAY VENT DAMPER
HX HEAT EXCHANGER
HZ HERTZ

I/O INPUT/OUTPUT
IAQ INDOOR AIR QUALITY
IBT INVERTED BUCKET TRAP
ICF IN-LINE CENTRIFUGAL FAN
ICU INTENSIVE CARE UNIT
ID INSIDE DIAMETER
IFB INTEGRAL FACE AND BYPASS
IN INCHES
IN HG INCHES OF MERCURY
IN WC INCH WATER COLUMN
IN WG INCH WATER GAUGE
IN-LB INCH-POUND
IPLV INTERGRATED PART LOAD VALUE
IRH INTRARED HEATER
IS INSECT SCREEN
IU INDUCTION UNIT
IV INLET VANES

J INTENTIONALLY LEFT BLANK

kg KILOGRAM
kg/HR KILOGRAM PER HOUR
kPa KILOPASCAL
kW KILOWATT
kWh KILOWATT HOUR
L LITER
L/h LITERS PER HOUR (OR LITERS/HOUR)
L/m LITERS PER MINUTE (OR LITERS/MINUTE)
L/s LITERS PER SECOND (OR LITERS/SECOND)
LAT LEAVING AIR TEMPERATURE
LBS/HR POUNDS PER HOUR
LF LINEAR FOOT (FEET)
LGT LEAVING GLYCOL TEMPERATURE
LH LATENT HEAT
LPG LIQUID PROPANE GAS
LPR LOW PRESSURE RETURN (STEAM CONDENSATE)
LPRC LOW PRESSURE STEAM RETURN (CLEAN)
LLHX LIQUID TO LIQUID HEAT EXCHANGER
LPS LOW PRESSURE STEAM
LPSC LOW PRESSURE STEAM (CLEAN)
LSD LINEAR SLOT DIFFUSER
LTCP LOCAL TEMPERATURE CONTROL PANEL
LVG LEAVING
LVR LOUVER
LWT LEAVING WATER TEMPERATURE

M METER, SI UNIT
M/s METERS PER SECOND (OR METERS/SECOND)
MA MIXED AIR
MAT MIXED AIR TEMPERATURE
MAU MAKE-UP AIR UNIT
MAV MANUAL AIR VENT
MAX MAXIMUM
MB MIXING BOX
MBH 1000 BTUH
MCA MINIMUM BRANCH CIRCUIT AMPACITY
MER MECHANICAL EQUIPMENT ROOM
MERV MINIMUM EFFICIENCY REPORTING VALUE
MH MANHOLE
MHP MOTOR HORSEPOWER
MIN MINIMUM
MM MILLIMETER
MOV MOTOR OPERATED VALVE
MPR MEDIUM PRESSURE RETURN (STEAM CONDENSATE)
MPS MEDIUM PRESSURE STEAM
MRI MAGNETIC RESONANCE IMAGING
MTD MEAN TEMPERATURE DIFFERENCE
MVD MANUAL VOLUME DAMPER
MZ MULTI-ZONE

NA NOT APPLICABLE
NC NOISE CRITERIA
NC NORMALLY CLOSED
NG NATURAL GAS
NGFM NATURAL GAS FLOWMETER
NO NORMALLY OPEN
NOAA NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NOM NOMINAL
NPLV NON-STANDARD PART LOAD VALUE
NPSH NET POSITIVE SUCTION HEAD
NTS NOT TO SCALE

OA OUTSIDE AIR
OAG OUTSIDE AIR GRILLE
OAI OUTSIDE AIR INTAKE
OD OUTSIDE DIAMETER
OFM OIL FLOWMETER
OR OPERATING ROOM

P PUMP
PA PASCAL
PC PUMPED CONDENSATE
PCF POUNDS PER CUBIC FOOT (FEET)
PD PRESSURE DROP
PEF PROPELLER (TYPE) EXHAUST FAN
PF PRE-FILTER
PG PRESSURE GAGE
PGW PROPYLENE GLYCOL-WATER (SOLUTION)
PHC PREHEAT COIL
PPM PARTS PER MILLION
PRS PRESSURE REGULATING (VALVE) STATION
PRV PRESSURE REGULATING VALVE
PSI POUNDS PER SQUARE INCH
PSIA POUNDS PER SQUARE INCH -ABSOLUTE
PSIG POUNDS PER SQUARE INCH -GAGE
PSS PRIMARY SECONDARY SYSTEM
PSV PRESSURE SAFETY VALVE
PTAC PACKAGED TERMINAL AIR CONDITIONER

R/E RETURN OR EXHAUST
RA RETURN AIR
RAD REFRIGERANT AIR DRYER
RAF RADIO FREQUENCY
RAHX ROTARY AIR HEAT EXCHANGER
RAT RETURN AIR TEMPERATURE
RCCH REMOTE CONDENSER CHILLER
RCU RECIPROCATING CHILLER UNIT
RD REFRIGERANT DISCHARGE
RDS ROOM DATA SHEETS
REA RELIEF AIR
RF RETURN FAN
RG RETURN GRILLE
RH RELATIVE HUMIDITY
RHC REHEAT COIL
RHG REFRIGERANT HOT GAS
RL REFRIGERANT LIQUID LINE
RIA RUN LOAD AMPERE
RO REVERSE OSMOSIS
RPM REVOLUTIONS PER MINUTE
RR RETURN REGISTER
RS REFRIGERANT SUCTION
RTU ROOF TOP UNIT
RV RELIEF VALVE

SA SUPPLY AIR
SAD SOUND ATTENUATING DEVICE
SAT SUPPLY AIR TEMPERATURE
SC SHADING COEFFICIENT
SCFM STANDARD CUBIC FEET PER MINUTE
SCI SPINAL CODE INJURY
SCR SILICON CONTROLLED RECTIFIER
SD SMOKE DETECTOR
SD SUPPLY AIR DIFFUSER
SD-1 SCHEMATIC DESIGN (SUBMISSION1)
SD-2 SCHEMATIC DESIGN (SUBMISSION2)
SDPR SMOKE DAMPER
SDR SMOKE DAMPER (RETURN)
SDS SMOKE DAMPER (SUPPLY)
SEN SENSIBLE HEAT
SF SUPPLY FAN
SG SUPPLY AIR GRILLE
SH STEAM HUMIDIFIER
SHC STEAM HEATING COIL
SI SQUARE INCHES
SP STATIC PRESSURE
SP GR SPECIFIC GRAVITY
SPD SUPPLY PROCESS AND DISTRIBUTION
SPRV STEAM PRESSURE REDUCING VALVE
SPS STATIC PRESSURE SENSOR
SQ FT SQUARE FOOT (FEET)
SR SUPPLY AIR REGISTER
SS STAINLESS STEEL
SSHX STEAM TO STEAM HEAT EXCHANGER
SSR SOLID SEPARATOR
ST STEAM TRAP
SUH STEAM UNIT HEATER
SV STEAM PRESSURE REDUCING VALVE
SVS STEAM VENT SILENCER
SWHX STEAM TO WATER HEAT EXCHANGER

T & PCV TEMPERATURE AND PRESSURE CONTROL VALVE
TAB TESTING, ADJUSTING, BALANCE
TD TEMPERATURE DIFFERENCE
TDH TOTAL DYNAMIC HEAD
TDS TOTAL DISSOLVED SOLIDS
TG TRANSFER GRILLE
TP TRAP
TR TOP REGISTER
TSP TOTAL STATIC PRESSURE
TSTAT THERMOSTAT
TU TERMINAL UNIT
TWU THRU-WALL UNIT

UC UNDER CUT
UC UNIT COOLER
UH UNIT HEATER
UL UNDERWRITERS LABORATORY
URV UPBLAST UNIT VENTILATOR
V VALVE
VAF VANE-AXIAL FAN
VAV VARIABLE AIR VOLUME
VD VOLUME DAMPER (MANUAL OPPOSED BLADE)
VFD VARIABLE FREQUENCY DRIVE
VHA VETERANS HEALTH ADMINISTRATION
VI VIBRATION ISOLATOR
VV VARIABLE INLET VANES
VP VACUUM PUMP
VPS VARIABLE PRIMARY SYSTEM
VR VACUUM (STEAM CONDENSATE) RETURN
VSD VARIABLE SPEED DRIVE
VUH VERTICAL UNIT HEATER
W WATTS
Wb WET-BULB (TEMPERATURE)
WC WATER COOLED
WCH WATER COOLED CHILLER
WCCU WATER COOLED CONDENSING UNIT
WCHP WATER COOLED HEAT PUMPS
WCPU WATER COOLED PACKAGED UNIT
WEF WALL EXHAUST FAN
WF WATER FILTER
WFCV WATER FLOW CONTROL VALVE
WFM WATER FLOWMETER
WFMD WATER FLOW MEASURING DEVICE
WG WATER GAGE
WPD WATER SIDE PRESSURE DROP

YR YEAR

- ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN A FURRED CHASE OR ABOVE THE HARD SUSPENDED CEILING.
- THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED. DUCT SIZES ARE NET INSIDE DIMENSIONS.
- ACCESS PANELS IN HARD SUSPENDED CEILINGS ARE REQUIRED FOR ALL VALVES, TRAPS, DAMPERS, CLEANOUTS, CONTROLS, ETC. ACCESS PANELS SHALL BE FURNISHED AND INSTALLED UNDER THE ARCHITECTURAL SPECIFICATIONS.
- TOTAL STATIC PRESSURE NOTED IN THE SCHEDULES INCLUDES DUCT SYSTEM, TERMINAL UNITS, FILTERS, COILS, ETC.
- FOR TYPICAL STEAM AND WATER PIPING CONNECTIONS TO EQUIPMENT, SEE STANDARD EQUIPMENT DETAILS.
- DIFFUSER, REGISTER AND GRILLE SIZES SHOWN ON FLOOR PLANS ARE NECK SIZES.
- WATER PIPE CONNECTIONS TO AIR HEATING AND COOLING COILS SHALL BE MADE TO PROVIDE COUNTER FLOW BETWEEN WATER AND AIR.
- WALL TYPE EXHAUST REGISTERS NOTED AS "BR" ON DRAWINGS ARE TO BE INSTALLED WITH BOTTOM ELEVATION OF REGISTER AT 7" [175mm] ABOVE FINISHED FLOOR.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF CEILING DIFFUSERS, REGISTERS, AND GRILLES.
- SEISMIC PROVISIONS REQUIRED - SEE SPECS
ALL PRESSURES LISTED ARE GAGE PRESSURE UNLESS OTHERWISE NOTED

AMENDMENT DRAWING
SUPERSEDES 100-MH001

CONSULTANTS:

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Drawing Title
ABBREVIATIONS AND GENERAL NOTES
Approved Project Director
VAPAHCS PLANNING AND ENGINEERING

Project Title
VA PUGET SOUND HEALTH CARE SYSTEM
UPGRADE SEATTLE ELECTRICAL
DISTRIBUTION FROM 5kV TO 15kV
Location
1660 South Columbian Way, Seattle, WA 98108
Date
02-25-2016
Checked
S.SCHORN
Drawn
C.PETERS

Project Number
663-15-102
Building Number
100
Drawing Number
100-MH001R
Dwg -- of --

Office of Construction and Facilities Management
Department of Veterans Affairs

OP2

REMARKS:

1. MANUFACTURERS AND MODELS ARE BASIS OF DESIGN.
2. PROVIDE WITH BAKED OFF-WHITE ENAMEL FINISH.

NOTES

1. WITH PUMP CONTROLLER

NOTES

1. WITH PUMP CONTROLLER

NOTES: 1. FILTER KIT CONTAINS (2) FL-30-100M, (2) FL-FBO-60327, (2) FL-30-10N, (2) FL-30-03N

2. FILTRATION CONSISTS OF:

STAGE 1 - 100 WIRE MESH STRAINER (149 MICRON SPIN FILTER)

STAGE 2 - 10 MICRON PARTICULATE REMOVAL (SPIN ON FILTER)

STAGE 3 - 3 MICRON PARTICLE REMOVAL (SPIN ON FILTER)

STAGE 4 - WATER SEPARATION AND REMOVAL (ELEMENT TYPE)

STAGE 5 - 1 MICRON PARTICULATE REMOVAL (ELEMENT TYPE)

1

NOTES; 1 WITH LIQUID LEVEL PROBES
2. WITH LIQUID LEVEL LEAK SENSORS
3. WITH VAPOR LEAK SENSOR

OP2

NOTES

1. USE A CURB ADAPTER, CURRENT CURB IS 40"x40"
2. VARI-GREEN MOTOR
3. ROOF MOUNTED FAN.
4. INLINE FAN.
5. EXPLOSION PROOF FAN, CLASS 1, DIV 1
6. 2 SPEED MOTOR
7. FACTORY ROOF CURB
8. EXPLOSION PROOF FAN MOTOR, , CLASS 1, DIV 1
9. USE A CURB ADAPTER, CURRENT CURB IS 34"x34"

04-01-16
Date

SAZAN
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VAPAHCS PLANNING AND ENGINEERING

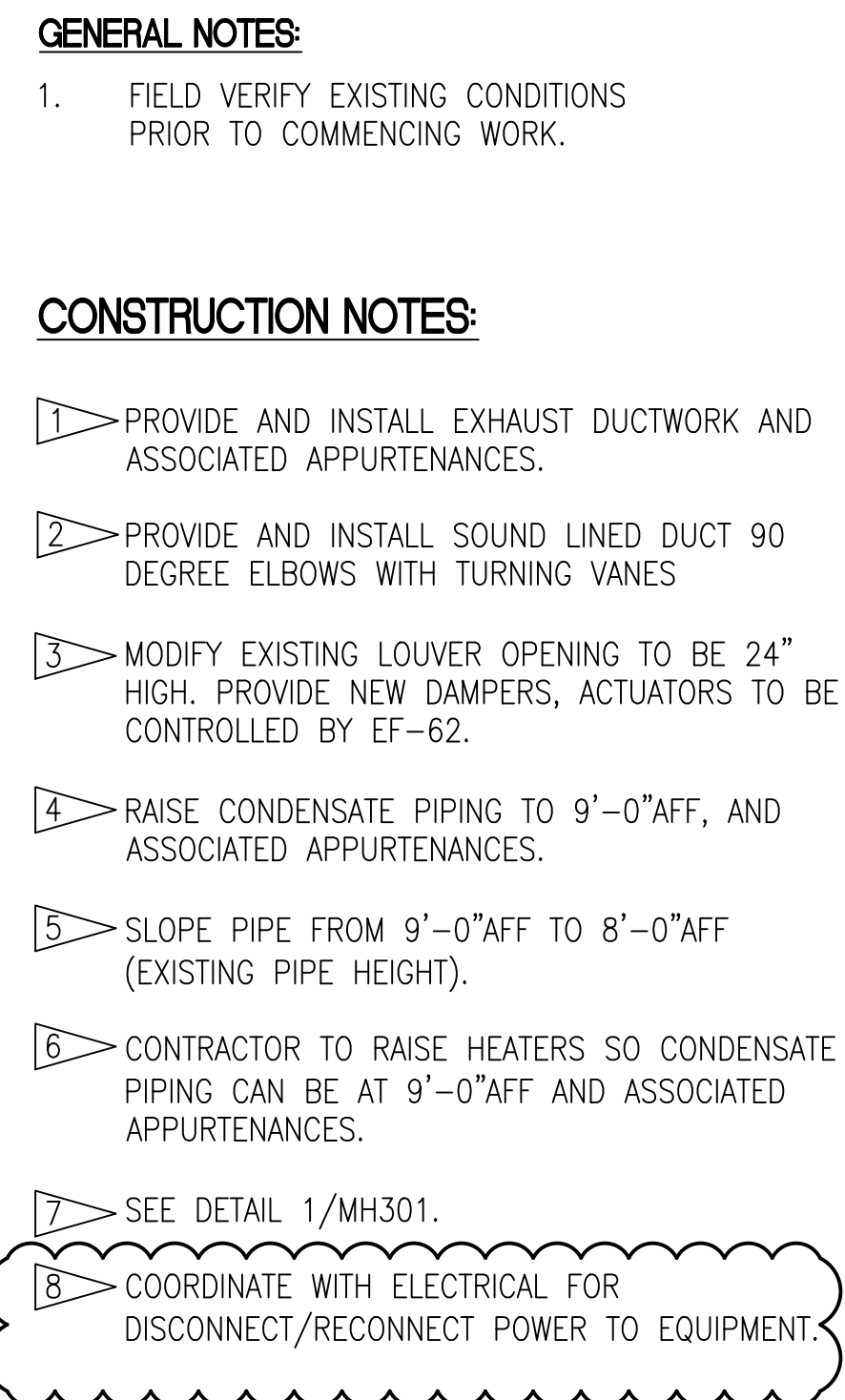
Location	1660 South Columbian Way, Seattle, WA 98108
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Date	Checked	Drawn
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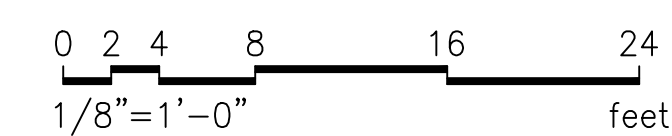
Drawing Number
100-111-10007100-MH00

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SCALE: $1/8'' = 1' - 0''$

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GENERAL NOTES:

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK.

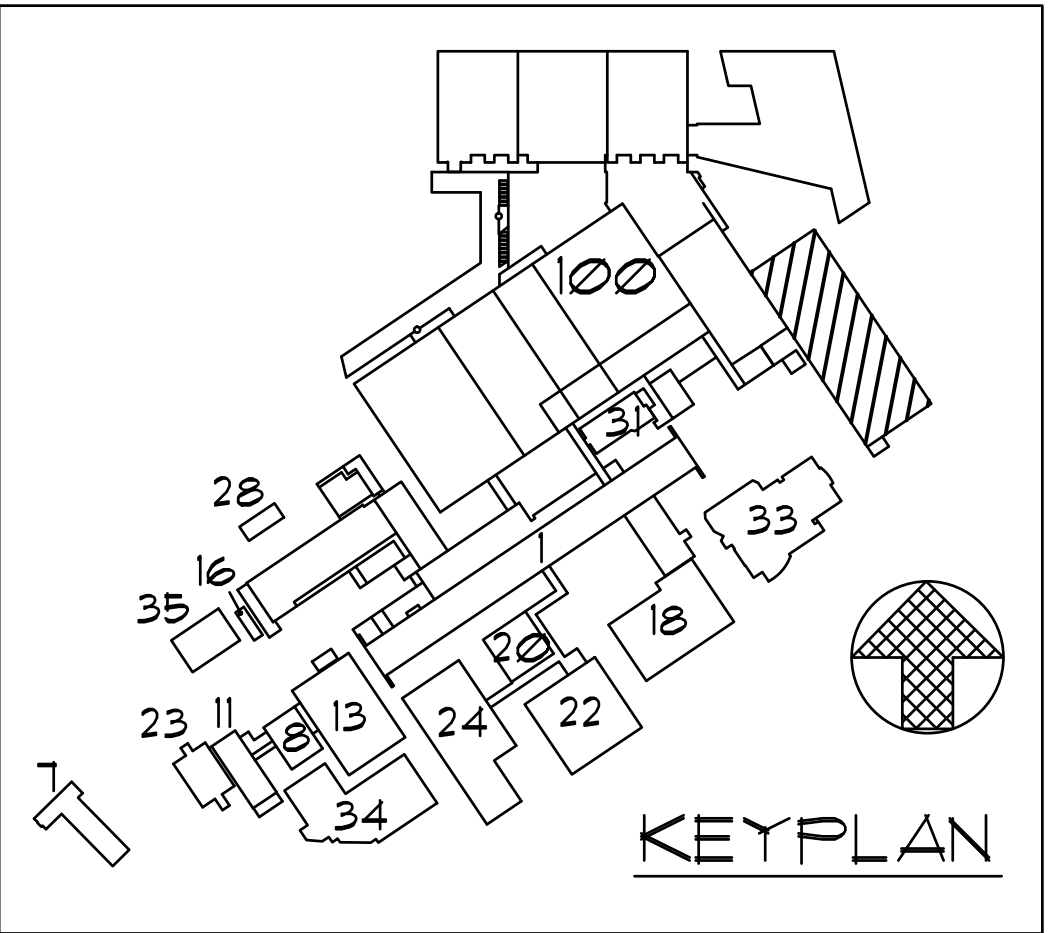
CONSTRUCTION NOTES:

1. PROVIDE AND INSTALL GENERATOR EXHAUST PIPE WITH RAIN CAP AND ASSOCIATED APPURTENANCES. SEE 3/MP402.
2. PROVIDE AND INSTALL NEW EXHAUST FAN AND ASSOCIATED APPURTENANCES.
3. PROVIDE AND INSTALL NEW ROOF HOOD.
4. RELAY FROM GENERATOR TO POWER CONTROL DAMPERS. CONTRACTOR TO PROVIDE AND INSTALL WIRING FROM GENERATOR TO DAMPERS.
5. CONTRACTOR TO PROVIDE AND INSTALL WIRING TO DAMPER. CONTROL DAMPER CONTROLLED BY EF-63.

ROOF PLAN - ENERGY PLANT

SCALE: 1/8" = 1'-0"

0 2 4 8 16 24
1/8" = 1'-0" feet



AMENDMENT DRAWING
SUPERSEDES 100-MH102

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ROOF PLAN
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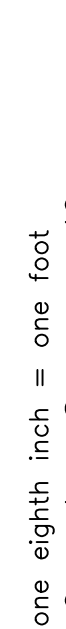
Drawing Number

100-MH102R

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- 1 ADD SENSOR TO TANK MONITORING CONSOLE.

 Department of
Veterans Affairs

